



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,464	10/07/2005	Kozo Murao	279302US0PCT	2239
22850 7590 07/18/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER LISTVOYB, GREGORY	
			ART UNIT 1711	PAPER NUMBER
			NOTIFICATION DATE 07/18/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/552,464

Applicant(s)

MURAO ET AL.

Examiner

Gregory Listvoyb

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Duplicate Claims

Applicant is advised that should claim [10] be found allowable, claim [15] will be objected to under **37 CFR 1.75** as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See **MPEP § 706.03(k)**.

Claim Rejections - 35 USC § 103

Claims 1-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang et al (Biotransformation of Acrylonitrile, Biotechnology and Bioengineering, vol 34 pp 380-386 (1989)), herein Hwang (cited in a previous Office Action) in combination with Abe et al (US patent 5476883) herein Abe, Ishii et al (US patent 6043061) herein Ishii (cited in a previous Office Action) and Murao et al (WO 02/50297 and US publication 2004/0048348) herein Murao (cited in a previous Office Action)

Hwang discloses a method for producing an acrylamide polymer comprising hydrating of acrylonitrile (ACN) with following enzymatic conversion of ACN to acrylamide and polymerizing monomers containing the acrylamide (p.381-382).

The enzymatic method carried out using microbial cells of a Nitrile Hydrataze as a catalyst (p.380-381).

Hwang does not disclose that concentration of Oxazole is less than 5 mg/kg or less and Hydrogen Cyanide concentration is 1 mg/kg or less.

Abe discloses a preparation process of Acrylamide from purified Acrylonitrile with following polymerization to Acrylamide polymer (see Example 1), where Oxazole is completely removed from Acrylonitrile (See Table 1, Example 1, where Oxazole is not detected with detection limit of 1.0 mg/kg (ppm)). Abe teaches that Acrylonitrile undergoes a purification procedure (see column 8, line 35), where Oxazole concentration reduces from 25 mg/kg to non-detectable limit (below 1 mg/kg) (see Table 1).

Abe teaches that Acrylamide, which has been synthesized by subjecting the Acrylonitrile to hydration has higher stability and when polymerized, provides an aqueous solution of higher viscosity compared with Acrylamide synthesized likewise from oxazole-containing Acrylonitrile (Column 2, line 20).

Art Unit: 1711

Ishii teaches a process for producing Acrylamide by enzymatically hydrating Acrylonitrile (see Example 1), where concentration of Hydrogen Cyanide is equal or less than 1 mg/kg (see Examples 1-3 and Tables 1-3).

Ishii teaches that decreasing a concentration of Hydrogen cyanide leads to lowering a deactivation rate of an enzyme (See Column 6, line 65).

Therefore, it would have been obvious to a person of ordinary skills in the art at the time the invention was made to use Acrylonitrile with Oxazole concentration of 5 mg/kg or less and Hydrogen Cyanide concentration is 1 mg/kg or less in order to produce polyacrylamide with high viscosity and achieve higher catalytic activity of the enzyme.

Hwang does not disclose that the reaction carries until the concentration of Acrylamide reaches at least 30% by mass or more.

Murao teaches an enzymatic process of Acrylonitrile conversion to Acrylamide at the presence of microbial cell of a Nitride Hydrates, where reaction carries until Acrylamide concentration reaches 45% mass (see Example 1).

Therefore, it would have been obvious to a person of ordinary skills in the art at the time the invention was made to carry out the conversion of Acrylonitrile to

Art Unit: 1711

Acrylamide until Acrylamide reaches the concentration of 30% mass or more in order to make economically sound process.

Response to Arguments

Applicant's arguments, see Reply to Office Action, filed on 4/23/07, with respect to the rejection(s) of claim(s) 1-4 have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Abe and Ishii (see discussion above).

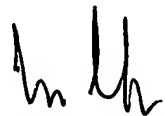
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory Listvoyb whose telephone number is (571) 272-6105. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Listvoyb
Examiner
Art Unit 1711

GL



James J. Seidleck
Supervisory Patent Examiner
Technology Center 1700